



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/856,335	05/18/2001	Erich Lugscheider	01-329	7881

7590

08/23/2004

Bachman & LaPointe
Suite 1201
900 Chapel Street
New Haven, CT 06510-2802

EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
----------	--------------

1762

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/856,335	LUGSCHEIDER, ERICH	
	Examiner	Art Unit	
	Katherine A. Bareford	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/6/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 2-9, 15-21, 23, 25-27 and 29-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 10, 12, 14, 24, 28, 32, 34 and 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

claims 11, 13, 22 and 33 are canceled

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment to the claims filed July 6, 2004 (in response to the notice of non-compliant amendment) has been received and entered. Also entered was the amendment to the specification of March 25, 2004. The arguments filed March 25, 2004 have also been considered.

Specification

2. The Examiner notes the filing of abstract on a separate sheet with the amendment of March 25, 2004.

3. The objection to the disclosure because of informalities is withdrawn ^{due to} ~~as in~~ the amendment of March 25, 2004: (1) at page 1, after the title, applicant has inserted that this case is a national stage application of PCT/EP99/09140, filed November 25, 1999. (2) Appropriate headings, such as "Background of the Invention", "Brief Description of the Specification", etc. have been provided where appropriate in the specification. (3) The duplicated material of pages 3c, line 7 through page 5, line 3 has been removed.

Claim Rejections - 35 USC § 112

Art Unit: 1762

4. The rejection of claims 1, 10, 12, 14, 24, 28 and 32-35 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn due to the amendment of July 6, 2004 to remove from claim 1 the requirement that the coating layer produced be less than 250 microns thick

5. The rejection of claim 34 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn due to the amendment of July 6, 2004 to claim 34 to remove the term "thermal spraying".

Double Patenting

6. The Examiner notes the cancellation of claim 33 in the amendment of July 6, 2004, thus removing a potential objection as being a substantial duplicate of claim 28.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1762

8. Claims 1, 10, 12, 14, 24, 28, 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al (US 5143746) in view of Savkar et al (US 5047612) and Moreau et al (US 5180921).

Inoue teaches a process for producing a wear resistant layer on a substrate by spraying an iron oxide based material to the substrate. Column 1, lines 5-20. The material to be sprayed can be 100 percent magnetite. Column 2, lines 5-15, column 4, lines 35-65 and column 5, lines 15-30. The material can be thermally sprayed by a plasma spraying process. Column 3, lines 50-68 and column 5, lines 30-68 (see the methods of Table 1 and 2). The material can be sprayed in the form of a powder. Column 4, lines 45-60 and column 5, lines 30-68 (see the particle sizes of Tables 1 and 2). Because of the material sprayed and the layer provided the coating would inherently be corrosion resistant. The applied coating can be homogenous. Column 4, lines 1-10. The applied coating can be a thin layer of less than 250 microns in thickness, i.e. 150 microns in thickness. See column 4, lines 45-60 and column 5, Table 2, Example 1, indicating a magnetite coating plasma sprayed to a thickness of about 150 microns.

Claim 12: the spray process can be a water plasma spray process. Column 3, line 65 through column 4, line 2 and column 5, lines 30-68 (see the methods of Tables 1 and 2).

Claims 14, 28: the material can be 100 percent magnetite or pure magnetite. Column 2, lines 5-15, column 4, lines 35-65 and column 5, lines 15-30.

Claim 24: the powder size can be 5-40 or 40-100 or 40-150 microns, for example. See column 5, lines 30-68 (see the particle sizes of Table 1 and 2).

Claim 32: the powder size can be 5-40 or 40-100 microns, for example. See column 5, lines 30-68 (see the particle sizes of Table 1 and 2).

Claim 35: The material can be sprayed by a plasma spraying process. Column 3, lines 50-68 and column 5, lines 30-68 (see the methods of Table 1 and 2).

Inoue teaches all the features of these claims except the on-line monitoring and control system (claim 1+), with monitoring of the amount of powder fed (claim 10).

However, Savkar teaches a method and apparatus for controlling the deposition of a powder in a plasma spray process, where the spray process is monitored by an on-line system. See column 1, lines 5-15 and 50-68. The system monitors the impact point of the material forming the layer of material on the substrate. See column 3, lines 15-30 and column 4, lines 45-60 and figure 1. The system also provides on-line monitoring and control of the powder feed rate to the plasma flame. See figure 1 and column 5, line 60 through column 6, line 15. This system provides for optimized deposition of the coating on the target substrate. See column 2, lines 15-50.

As well, Moreau teaches a method and apparatus for controlling the deposition of a powder in a plasma spray process, where the spray process is monitored by an on-line system. See column 1, lines 30-50 and figures 1-2. The system monitors direct process parameters of temperature and velocity of particles in the thermal spray immediately before their impact on the substrate. See column 1, lines 30-50. Moreau teaches that this allows an efficient feedback signal generator performing feedback for the gun input parameters to maintain optimum spraying

conditions. See column 1, lines 30-50. This system provides can be used in addition to measuring indirect gun input variables. See column 1, lines 30-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Inoue to use both the on-line monitoring and control systems suggested by Savkar and Moreau in order to provide optimized deposition of the coating onto the substrate because Inoue teaches a plasma spray system of depositing magnetite onto a substrate surface and Savkar and Moreau teach the desirability of using on-line monitoring and control systems when plasma spraying in order to optimize the deposition of the coating. It would have been obvious to use both types of monitoring systems (Savkar provides for monitoring impact point, powder feed, carrier gas, etc., and Moreau provides for measuring particle temperature and velocity in the stream) simultaneously to provide maximum control of system variables because Savkar and Moreau teach the benefits of measuring various features of the spray system on-line and both teach that more than one type of process feature can be monitored (Savkar provides for monitoring impact point, powder feed, carrier gas, etc., and Moreau provides for measuring particle temperature and velocity in the stream and also indicates that other gun variables can be monitored).

9. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue in view of Savkar and Moreau as applied to claims 1, 10, 12, 14, 24, 28, 32 and 34 above, and further in view of Yoshinaka et al (US 5158643).

Inoue in view of Savkar and Moreau teaches all the features of this claim except the air as plasma gas. Inoue does teach that the spray coating is conducted in a neutral gas atmosphere not having an extreme oxidizing or reducing nature. See column 3, lines 50-55. For example, argon or mixtures of argon and nitrogen are used. See column 3, lines 55-60.

Yoshinaka teaches that when plasma spraying material, it is conventional known to provide plasma fueled by air, argon, hydrogen or helium, etc. see column 9, lines 45-55.

It would have been obvious to one of ordinary skill in the art to modify Inoue in view of Savkar and Moreau to use air as part of the plasma fuel gas as suggested by Yoshinaka with an expectation of desirable results, because Inoue in view of Savkar and Moreau teaches using a plasma gas such as argon/nitrogen to provide an atmosphere that is not of an extreme oxidizing or reducing nature, and Yoshinaka teaches that it is conventionally known to use air as part of plasma gas mixture. While air would be oxidizing, one of ordinary skill in the art would understand that it could be mixed with the described argon/nitrogen to provide a not "extreme" oxidizing mixture, which would allow for a more cost efficient gas.

10. Schutz (US 5912471) and Bourque et al (US 5986277) both teach the on-line monitoring of properties of the material to be deposited within the thermal spray. See the abstracts of each.

Priority

Art Unit: 1762

11. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on Nov. 25, 1998. It is noted, however, that applicant has not filed a certified copy of the 198 54 512.6 application as required by 35 U.S.C. 119(b).

The only priority document received was a copy of 198 57 737.0, filed Dec. 15, 1998.

Response to Arguments

12. Applicant's arguments with respect to claims 1, 10, 12, 14, 24, 28, 32 and 34-35 have been considered but are moot in view of the new ground(s) of rejection.

The Examiner has cited Moreau as to the measuring of the properties fo the material to be deposited in the thermal spray as discussed in the rejection above.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 1762

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:30-4:00) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER